

WHAT WE CLAIM IS:

1. An adaptive modulation and coding method comprising:
 - selecting one of a plurality of different
 - 5 available modulation and coding levels to apply to a signal transmitted from a transmitter to a receiver, the selection being based on a comparison between a signal transmission quality and a threshold value; and
 - adjusting the threshold value when the signal
 - 10 transmission quality is within a predetermined range of the threshold value, and maintaining the threshold value unchanged when the signal transmission quality is outside that range.
2. A method as claimed in claim 1, wherein the
- 15 signal transmission quality is a signal-to-interference ratio.
3. A method as claimed in claim 1, wherein the signal transmission quality is measured by the receiver.
- 20 4. A method as claimed in claim 1, wherein in the adjusting step the threshold value is increased by an upward amount when the signal is not received successfully by the receiver, and is decreased by a downward amount when the signal is received
- 25 successfully by the receiver.
5. A method as claimed in claim 1, wherein in the adjusting step the threshold value is increased by an upward amount when the signal received by the receiver fails a cyclic redundancy check, and is
- 30 decreased by a downward amount when the received signal passes the cyclic redundancy check.
6. A method as claimed in claim 4, wherein the upward amount is different from the downward amount.
7. A method as claimed in claim 6, wherein the
- 35 downward amount is smaller than the upward amount.

8. A method as claimed in claim 4, wherein a ratio of the downward amount to the upward amount is dependent upon a target error rate of the received signal.

5 9. A method as claimed in claim 4, wherein the downward amount and/or the upward amount is/are dependent upon a difference between the threshold value and the signal transmission quality.

10 10. A method as claimed in claim 9, wherein the or each the amount increases as the difference decreases.

11. A method as claimed in claim 1, having a threshold value for each pair of adjacent the levels, and in the selecting step the selection is based on a comparison between the signal transmission quality and the threshold values.

12. A method as claimed in claim 11, wherein each the threshold value is adjusted only when the signal transmission quality is within a predetermined range of the threshold value concerned.

13. A method as claimed in claim 11, wherein the predetermined range for at least one the threshold value is different from the predetermined range for another the threshold value.

25 14. A method as claimed in claim 1, wherein the adjusting step and the selecting step are carried out in the receiver, and the receiver reports the selected level to the transmitter.

30 15. A method as claimed in claim 1, wherein the receiver reports the signal transmission quality to the transmitter, and the adjusting step and selecting step are carried out in the transmitter.

35 16. A method as claimed in claim 1, wherein the selecting step is carried out after the adjusting step, and in the selecting step selection of a higher level, if indicated by the comparison between the signal

transmission quality and the threshold value(s) as adjusted or maintained in the adjusting step, is prevented when the signal was not received successfully by the receiver.

5 17. A method as claimed in claim 1, wherein the transmitter is a base station of a wireless communication system, and the receiver is a user equipment of the system.

10 18. A method as claimed in claim 17, wherein the signal is a downlink packet access signal.

 19. Adaptive modulation and coding apparatus comprising:

15 a level selecting unit which selects one of a plurality of different available modulation and coding levels to apply to a signal transmitted from a transmitter to a receiver, the selection being based upon a comparison between a signal transmission quality and a threshold value; and

20 a threshold value adjusting unit operable, when the signal transmission quality is within a predetermined range of the threshold value, to adjust the threshold value, and also operable when the signal transmission quality is outside that range, to maintain the threshold value unchanged.

25 20. A user equipment, for use in a wireless communication system, comprising:

30 a level selecting unit which selects one of a plurality of different available modulation and coding levels to be applied by a base station of the system to a downlink signal transmitted from the base station to the user equipment, the selection being based on a comparison between a signal transmission quality and a threshold value;

35 a threshold value adjusting unit operable, when the signal transmission quality is within a predetermined range of the threshold value, to adjust

the threshold value, and also operable, when the signal transmission quality is outside that range, to maintain the threshold value unchanged; and

reporting means for reporting the selected level
5 to the base station.

21. A base station, for use in a wireless communication system, comprising:

a report receiving unit which receives from a user equipment of the system a report of a downlink signal
10 transmission quality produced by the user equipment;

a level selecting unit which selects one of a plurality of different available modulation and coding levels to apply to a downlink signal transmitted from the base station to the user equipment, the selection
15 being based upon a comparison between the reported downlink signal transmission quality and a threshold value; and

a threshold value adjusting unit operable, when the signal transmission quality is within a
20 predetermined range of the threshold value, to adjust the threshold value, and also operable, when the signal transmission quality is outside that range, to maintain the threshold value unchanged.

22. A recording medium storing an operating
25 program which, when run on a processor in a user equipment of a wireless communication system, causes the user equipment to carry out the steps of:

selecting one of a plurality of different available modulation and coding levels to be applied by
30 a base station of the system to a downlink signal transmitted from the base station to the user equipment, the selection being based on a comparison between a signal transmission quality and a threshold value;

35 when the signal transmission quality is within a predetermined range of the threshold value, adjusting

the threshold value, and, when the signal transmission quality is outside that range, and maintaining the threshold value unchanged; and

reporting the selected level to the base station.

5 23. A recording medium carrying an operating program which, when run on a processor in a base station of a wireless communication system, causes the base station to carry out the steps of:

10 receiving from a user equipment of the system a report of a downlink signal transmission quality produced by the user equipment;

15 selecting one of a plurality of different available modulation and coding levels to be applied by the base station to a downlink signal transmitted from the base station to the user equipment, the selection being based on a comparison between the reported downlink signal transmission quality and a threshold value; and

20 when the signal transmission quality is within a predetermined range of the threshold value, adjusting the threshold value, and when the signal transmission quality is outside that range, maintaining the threshold value unchanged.